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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,184	12/26/2001	Toshihisa Ishida	56832 (71004)	4870

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EXAMINER

RODEE, CHRISTOPHER D

ART UNIT PAPER NUMBER

1756

DATE MAILED: 05/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.



Office Action Summary	Application No.	Applicant(s)	
	10/036,184	ISHIDA ET AL.	
	Examiner	Art Unit	
	Christopher D RoDee	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>2</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Election/Restrictions

Applicant's election of Group I, claims 1-8, in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 9-17 drawn to the non-elected invention have been canceled.

Claim Interpretation

The invention is claimed as "An electrophotographic developer used in steps where it is fed from a developer carrier to develop an electrostatic latent image on an electrostatically charged-image holder and where the above developed image is transferred onto a transferring material, wherein it is used for the electrostatically charged-image holder described above having a radius of curvature of 18 mm or less in a development effective range and is a two-component developer comprising a toner comprising at least a binder and a colorant and a carrier" where the toner and carrier have certain characteristics. It appears the limitation "used in steps..." is an intended use limitation of the developer and does not impart patentable weight to the "electrophotographic developer". This position is taken because the invention is stated at the beginning of claim 1 as being "an electrophotographic-developer". The "two component developer..." limitation is considered as providing the patentable limitations to the claims. The Examiner suggests that the word "used" in line 1 of claim 1 be changed to "for use" to make clear that the method steps recited are intended use.

Claim Objection

Claim 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 8 further describes the intended use of the developer of any one of claims 1 to 3. Because the intended use is not a patentable limitation this claim does not provide any further limitation to the developer of the preceding claims. The Examiner suggests that this claim be canceled. Any art applicable to any of claims 1 through 3 is applicable to this claim because it retains the same limitations as the base claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi *et al.* in US Patent 5,256,512.

Kobayashi was described above with respect to a comparative example. This inventive portion of this document states that it is directed to a full-color toner having a good spectral reflection characteristic and a two-component developer containing the toner (col. 3, l. 44-47). The full color toner contains each of a cyan, magenta, yellow, and black toner, each with specific characteristics of particle size distribution.

Each of the yellow, cyan, magenta, and black toners has a volume-average particle size of 11.0 to 14.0 μm , containing 30% by number or less of particles having sizes below 6.35 μm and containing 9% by weight or less of particles having sizes above 20.2 μm (col. 4, l. 7-col. 5, l. 35). The color toner has a volume-average particle size of 11.0 to 14.0 μm ; a number-basis distribution such that toner particles of 6.35 μm or smaller occupies 30% by number or less, preferably 25% by number or less, more preferably 20% by number or less; a volume-basis distribution such that toner particles of 20.2 μm or larger occupies 9 wt. % or less, preferably 7 wt. % or less, more preferably 5 wt. % or less (col. 9, l. 14-23).

As discussed in column 9, the number-basis proportion of toner particles of 6.35 μm or smaller (fine powder) is closely connected to degree of scattering. Scattering results in soiling of a charging wire, soiling of optical fiber in the toner concentration detector, inoperability of sliding parts due to accumulation of scattered toner and attachment of scattered toner to non-image parts in an electrostatic latent image on the photosensitive drum to cause fog or poor cleaning, thus leading to a decrease in life of the copying machine. Additionally, a toner volume-average particle size exceeding 14.0 μm and/or particles of 20.2 μm or larger exceed 9 wt. %, there arises an increased tendency of roughening of images, blurring of characters or scattering.

Useful binder resins for the toner include styrene based resins (col. 13, l. 11-30).

The carrier used in the present invention may be composed of iron or an alloy of iron with nickel, copper, zinc, cobalt, manganese, chromium, and rare earth elements in the surface oxidized form or in the surface non-oxidized form, or of an oxide or ferrite form of these metal or alloys (col. 13, l. 60-66). The carrier is the preferably coated with a resin, such as a silicone resin (col. 14, l. 8). The carrier may have an average particle size of 20-100 μm , preferably 25-70 μm , more preferably 30-65 μm (col. 14, l. 20-21). As seen in testing procedure for the

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produced toners, they have a negative chargeability (col. 10, l. 35 – col. 11, l. 3; col. 24, l. 13-28).

Exemplified toners (see Table 3) have volume-average sizes of between 12.4 and 12.9 μm with from 13.1 to 19.7 % of particles having a size below 6.35 μm (cols. 24 & 25). The reference discloses each of the individual features of claims 1 and 4-8 but does not identically disclose a two-component developer having each of the components of the instant claims. The reference also does not disclose the variation coefficient of claim 2 or the size characteristics of claim 3. Each of these features restricts the size distribution of the toner. Claim 2 restricts the overall size distribution of the toner while claim 3 restricts the sizes in certain ranges below 6.35 μm .

It would have been obvious to one having ordinary skill in the art at the time the invention was made to prepare the toner of the two-component developer with an average size of 11.0 μm because this is a specifically recited size of the toners of the instant invention. The artisan would also have found it obvious to prepare the carrier with a size of 65 μm , 70 μm , or 100 μm because each of these sizes are specifically recited as useful in the instant invention and the sizes at or near 65 μm or 70 μm are preferred in the instant invention. The artisan would have found it obvious to prepare the toner with a styrene resin because these types of resins are specifically disclosed by the reference as useful for the toner. The artisan would also have found it obvious to coat the carrier core with a silicone resin because the reference discloses silicone resins as effective core coating resins. The artisan would have found it obvious to prepare the carrier core from iron because the reference discloses iron cores as effective for magnetic development.

With respect to claim 2, the artisan would have found it obvious to minimize the particle size distribution of the toner particles because the reference specifically teaches that too many

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particles below of 6.35 μm produce scattering while too many particles above 20.2 μm increased tendency of roughening of images, blurring of characters or scattering. The artisan would recognize from this disclosure that size distribution of the toner is a result effecting variable and would have found it obvious to minimize the particle size distribution and the number of particles distant from the average size so that minimal particles are present at the extremes of the size distribution. The limitations of claim 2 are related to the size distribution of the toner noting specification page 17, beginning at line 15. Thus the artisan minimizing the size distribution would optimize the variation coefficient, which relates the standard distribution of the toner size to the average toner size.

With respect to claim 3, the number of particles present below 6.35 μm is a result effecting variable according to the reference because particles these sizes increase scattering. Claim 3 restricts the number of particles in each size range below 6.35 μm . Minimizing the number of particles in any size range below 6.35 μm would reduce scattering according to the reference and would have been obvious to the skilled artisan in an effort to reduce scattering. The use of specific size ranges (e.g., 4.00 to 5.04 μm) would have been obvious in determining the number of particles below 6.35 μm because the artisan can select any arbitrary size range to measure the number of particles below 6.35 μm . Further, the use of the Coulter Counter (col. 18, l. 10-17) typically measures sizes in the ranges of claim 3. The Examiner takes Official Notice of this position. Thus the range would have been obvious given the device disclosed by the reference to measure the number of particles below 6.35 μm .

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 703 308-2465. The examiner can normally be reached on most weekdays from 6 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703 308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.

cdr
May 1, 2003


CHRISTOPHER RODEE
PRIMARY EXAMINER